

# **STANDARDS OF PRACTICE NO. 1**

**August 18 1982**

**Revised May 8, 1992**

**Revised March 14, 1996**



# **ARKANSAS**

## **Minimum Standards**

### **For Property Boundary Surveys and Plats**



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## PREFACE


A legal notice to inform the public of the State Surveyor's proposed revisions to the Arkansas Minimum Standards for Property Boundary Surveys and Plats (Standards of Practice No. 1) for the general practice of land surveying in the State of Arkansas, Pursuant to the Administrative Procedure Act and Act 583 of 1973 as amended, review of Arkansas Code Volume, 7, 10-03-309 of 1987 and that a public hearing would be held December 4, 1991, was published in the Arkansas Democrat once a week for five weeks beginning October 17, 1991 and ending on November 14, 1991.

A public hearing was held December 4, 1991, at 9:30 a.m. in the conference room of the State Surveyor's office. The revised standards were filed for record in the office of the Secretary of State on March 31, 1992.

These revised standards were reviewed and approved by the Administrative Rules and Regulations Committee of the Arkansas Legislative Council, on May 8, 1992.


The Land Survey Division of the Arkansas Commissioner of State Lands office and the State Surveyor state that these revised standards of practice for all property boundary surveys and plats are now in effect.

These standards will be used as a guideline by the Arkansas State Board of Registration for Professional Engineers and Land Surveyors in determining the professionalism of land surveyors performing surveys in the State of Arkansas.



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Charlie Daniels  
Commissioner of State Lands



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Everett Rowland  
State Surveyor

July 1, 2001

# STANDARDS FOR ARKANSAS BOUNDARY SURVEYS AND PLATS

## INTRODUCTION

The purpose of these standards is to set minimum accuracies for land boundary surveys and minimum requirements for research, investigation, monumentation, and plat preparation, and the subsequent recording and distribution of the plat upon completion of a survey.

Act 101 of 1967 states that the purpose of the registration of land surveyors is to safeguard the life, health, or property of the public. The practice of land surveying in this state was thereby declared to be subject to regulation in the public interest. These standards will promote the public interest.

These standards are binding upon any land surveyor duly registered to practice within the State of Arkansas performing surveying services as defined herein. It is not the intent of these standards to limit the application of more stringent standards required by code, ordinance, or contractual specification.

## SECTION 1

### DEFINITIONS

#### 1.1 Survey

A. A survey has been performed when any service has been provided to determine the location of boundaries of real property or to delineate routes, spaces, or sites in real property for public or private use by using relevant elements of law; research; record, parole, and physical evidence; measurement; analysis; computation; mapping; platting; and the drafting of legal description, and/or includes one or more of the following:

1. Preparation of plats showing the shape and areas of tracts of land and their subdivision into smaller tracts.
2. Preparation of plats showing the location of streets, roads, rights-of-way and easements of any kind.
3. Preparation of official plats, or maps, of said land thereof in this state.

B. A survey shall be deemed to be complete when the survey plat has been dated and stamped. Act 645 of 1969 requires the filing of a plat within thirty days after the survey is completed.

## **1.2 Area Designations**

- A. Urban Area ---any municipality within the state having a population of 500 or more.
- B. Fringe Area---all that area within three miles of a city having a population of 2000 or more, or within one mile of a city having a population between 500 and 2000, or any area which, because of its location or natural resources, may become a developed area.
- C. Rural Area---any area where land is used predominantly for agricultural purposes and which shows no signs of becoming a developed area.

## **1.3 Property Types**

- A. Type A--small lots where buildings may be erected along property lines or where high land values warrant high accuracy.
- B. Type B---parcels or tracts normally encountered in survey work other than Type "A" or Type "C", the surveyor should select the positional accuracy within the range given according to the value and expected use of the land.
- C. Type C---parcels or tracts with all sides 100' or longer, and those having a periphery of 5000' or more.

## **1.4 Closure or Error of Closure**

- A. Linear Closure---a measure of the horizontal linear error without regard to direction, between the computed location of the first and last points of a traverse when either the traverse actually returns to its beginning point (geometrically and mathematically closed), or the traverse ends at a point of previously established control relative to the beginning point (geometrically open, but mathematically closed).
- B. Closure Ratio---the ratio between the horizontal linear error of closure to the total horizontal distance traversed, with the numerator of the ratio being the number "one".
- C. Positional Error or Positional Accuracy---the linear horizontal distance without regard to direction by which a measured position of a monumented survey marker differs from its computed location.

## SECTION 2

### MINIMUM ACCURACY STANDARDS

**2.1 Determination of Area and Property Type.** The area designation and property type for the land being surveyed shall be determined, using the definitions given in Section 1, paragraphs 1.2, and 1.3. Maximum allowable positional error and closure ratio are listed in Table 1 below:

TABLE 1

#### DETERMINATION OF AREA AND PROPERTY TYPE

Area Designation	Property Type	Maximum Allowable Positional Error (feet)	Maximum Allowable Closure Ratio
URBAN	A	0.10	N/A
	B	0.50	N/A
	C	0.75*	1:10,000*
FRINGE	A	0.15	N/A
	B	0.67	N/A
	C	1.50*	1:5000*
RURAL	A	0.20	N/A
	B	1.00	N/A
	C	3.00*	1:5000*

\*Use either positional error or closure ratio, depending upon which gives the smaller value.

**2.2 Closure ratio.** Field work which has a closure ratio greater than the maximum shown, or linear error of closure greater than the maximum positional error shown, shall be considered unacceptable and shall be corrected. Adjustment of a traverse must not shift the position of any point more than the maximum positional error listed in the table above.

**2.3 ALTA/ACSM Land Title Survey Standards.** In lieu of maximum allowable positional error, tables I and II of the ALTA/ACSM Land Title Surveys (Dated 1988) may be used for determining minimum accuracy requirements. These two tables are as follows: *(On following pages)*

**2.4 Radial Surveys.** Accuracy criteria for a radial survey shall be based on comparison between the computed locations of any point from two different instrument locations. The linear closure between the computed locations of any point, when the point is located from two different control points, shall not be more than one-half the maximum allowable positional error.

## **TABLE 1**

### **SURVEY CLASSES BY LAND USE**

#### **CLASS A — URBAN SURVEYS**

Surveys of land lying within or adjoining a city or town. This would also include the surveys of commercial and industrial properties, condominiums, townhouses, apartments and other multiunit developments, regardless of geographic location.

#### **CLASS B — SUBURBAN SURVEYS**

Surveys of land lying outside urban areas. This land is used almost exclusively for single family residential use or residential subdivisions.

#### **CLASS C — RURAL SURVEYS**

Surveys of land such as farms and other undeveloped land outside the suburban areas which may have a potential for future development.

#### **CLASS D — MOUNTAIN AND MARSHLAND SURVEYS**

Surveys of lands which normally lie in remote areas with difficult terrain and usually have limited potential for development.

AMERICAN CONGRESS ON SURVEYING AND MAPPING

TABLE 2

MINIMUM ANGLE, DISTANCE AND CLOSURE REQUIREMENTS FOR CLASSES OF SURVEYS

(1)

SURVEY CLASS	DIR. READING OF INSTRUMENT (2)	INSTRUMENT READING ESTIMATED (3)	NUMBER OF OBSERVATIONS PER STATION (4)	SPREAD FROM MEAN OF D & R NOT TO EXCEED (5)	ANGLE CLOSURE WHERE N = NO. OF STATIONS NOT TO EXCEED (6)	LINEAR CLOSURE (6)	DISTANCE MEASUREMENT (7)	MINIMUM LENGTH OF MEASUREMENTS (8), (9), (10)
A	$20'' < 1' >$	$5'' < 0.1' >$ N.A.	2 D & R	$5'' < 0.1' >$	$10'' \sqrt{N}$	1:15,000	EDM or Doubletape with steel tape	(8) 81m, (9) 153m (10) 20m
B	$20'' < 1' >$	$10'' < 0.1' >$ N.A.	2 D & R	$10'' < 0.2' >$	$15'' \sqrt{N}$	1:10,000	EDM or steel tape	(8) 54m, (9) 102m (10) 14m
C	$20'' < 1' >$	N.A.	1 D & R	$20'' < 0.3' >$	$20'' \sqrt{N}$	1:7,500	EDM or steel tape	(8) 40m, (9) 76m (10) 10m
D	$1' < 1' >$	N.A.	1 D & R	$30'' < 0.5' >$	$30'' \sqrt{N}$	1:5,000	EDM or steel tape	(8) 27m, (9) 51m (10) 7m

Note (1) All requirements of each class must be satisfied in order to qualify for that particular class of survey. The use of a more precise instrument does not change the other requirements, such as number of angles turned, etc.

Note (2) Instrument must have a direct reading of at least the amount specified (not an estimated reading), i.e.;  $10'' =$  Micrometer reading theodolite,  $< 1' > =$  Scale reading theodolite,  $10'' =$  Electronic reading theodolite,  $20'' =$  Micrometer reading theodolite, or a vernier reading transit.

Note (3) Instrument must have the capability of allowing an estimated reading below the direct reading to the specified reading.

Note (4) D & R means the Direct and Reverse positions of the instrument telescope, i.e., Class A requires that two angles in the direct and two angles in the reverse position be measured and meaned.

Note (5) Any angle measured that exceeds the specified amount from the mean must be rejected and the set of angles re-measured.

Note (6) Ratio of closure after angles are balanced and closure calculated.

Note (7) All distance measurements must be made with a properly calibrated EDM or Steel tape, applying atmospheric, temperature, sag, tension, slope, scale factor and sea level corrections as necessary.

Note (8) EDM having an error of 5mm, independent of distance measured (Manufacturers specification).

Note (9) EDM having an error of 10mm, independent of distance measured (Manufacturers specifications).

Note (10) Calibrated steel tape.

## SECTION 3

### GENERAL PROCEDURES

**3.1 Research and Investigation.** Prior to a boundary survey, the surveyor shall obtain information from the following, as applicable: field notes and plats of the original government survey and subsequent surveys, deeds, maps, county and state records, title certificates, abstracts, recorded corner certificates, etc. The surveyor shall analyze the information obtained to determine, to the best of his ability, the boundaries which were requested to be located.

### 3.2 Field Work

A. Execution. The surveyor shall, under his personal direction, traverse and connect all available monuments appropriate or necessary for the location of boundaries of corners, and coordinate the results of this field research and investigation.

B. Measurement Techniques. Survey measurement techniques shall be designed to eliminate mistakes and minimize or compensate for instrumental, environmental, and operator error.

C. Procedural Techniques. Surveys based on the U.S. Public Land Survey System shall be tied to the section and/or quarter-section corners which control position in accordance with the B.L.M. procedure as set forth by the HANDBOOK FOR ARKANSAS LAND SURVEYORS. Except that if a survey is to be performed within a section previously subdivided in a manner consistent with this subsection then the surveyor may tie to and rely on any well defined record corners found therein. This exception in no manner relieves the surveyor from any liability resulting from his reliance on said corners in the performance of the survey. The current BUREAU OF LAND MANAGEMENT (BLM) MANUAL OF SURVEYING INSTRUCTIONS shall be used as a guide for the restoration of lost or obliterated corners and subdivision of sections.

D. Lot and Block subdivision surveys shall conform to the minimum accuracy standards as set forth in Section 2, and to local subdivision ordinances (standards and regulations). Lot surveys within such subdivisions shall be tied to sufficient monumentation within the subdivision as required to verify the correctness of the survey.

E. Monumentation. The surveyor shall cause monuments marking the corners of a parcel to be set as follows:

1. Location. The surveyor shall locate or confirm the prior location of permanent monuments at each boundary corner of the lot, parcel, or tract being surveyed. When the placement of a required monument at its proper location is impractical, an offset monument may be set. The location of said offset monument shall be clearly shown on the plat. The correctness or incorrectness of previously placed (existing) monuments shall be confirmed by the surveyor, and they shall be shown and referenced on the plat.
2. Type of Monument. The surveyor shall select a type of monument that provides a reasonable degree of permanency consistent with the physical features of the terrain and the intended use of the monument. The following guidelines shall be followed as closely as is practically possible.
  - a. All the monuments shall be clearly marked with the registration number of the surveyor setting the monument.
  - b. Iron pipe shall be one-half inch in diameter or larger and steel rods (rebar) shall be at least three-eighths inch in diameter.
  - c. Any monument marking the location of a sixteenth-corner, quarter-corner, or a section corner shall be marked with the precise corner position, the proper identification of the corner in accordance with the current BLM manual, and the year of monumentation.
3. Monument Accessories. For any monument marking the location of a sixteenth ( $1/16$ ) corner, a quarter ( $1/4$ ) corner, or a section corner (or any other corner for which the surveyor desires accessory evidence), at least two (preferably four) permanent or semipermanent witness objects (sound trees, when available) shall be referenced.

**3.3 Publication of Results.** A plat showing the results of each survey shall be prepared and distributed as follows:

A. Preparation of plats. A scale drawing of the property with the following information shall be part of every plat.

1. Boundaries with distances and directions (bearing or azimuths).
2. Ties to corners, monuments, corner accessories and other relevant witness information which control the location of a boundary or corner; the surveyor's basis for acceptance thereof, and the originating source of any monument or accessory.

3. Record title lines, possession lines, and reasonably observed encroachments.
4. Description of monuments found and monuments set during the course of the survey.
5. Point of beginning for metes and bounds surveys.
6. Client's name.
7. Business address of surveyor.
8. North arrow with basis of direction.
9. Bar scale.
10. Legend.
11. Tract Description.
12. Surveyor's stamp, signature, and certification if appropriate.
13. Date.
14. Act 919 of 1981. An Act to provide that every survey of real property made after the effective date of this act shall state therein the approximate number of acres or parts of acres included in the tract surveyed, and to provide that if the parcel of land surveyed includes lands lying in more than one quarter-quarter, the number of acres or parts of acres of the tract lying in each quarter-quarter shall be stated separately, and for other purposes.

**B. Revision of Plats.** A revised plat shall be filed, showing clearly the book and page number where the original plat was filed, and indicating the portions revised.

**C. Distribution of All Plats.** Copies of the plat shall be distributed within 30 **days** of completion as follows:

1. County records in accordance with Act 645 of 1969.
2. State Surveyor's office.
3. Client, upon completion of all contractual obligations.
4. Plats of surveys of lots in subdivision or additions having lots and/or block numbers, that have been filed as record in th County Clerk's office do not need to be sent to the State Surveyor's office.

## **SECTION 4**

### **ENFORCEMENT**

Enforcement of these regulations is vested in the State Surveyor and the Arkansas State Board of Registration for Professional Engineers and Land Surveyors, as prescribed in Act 458 of 1973, Section III, and Act 1070 of 1987, paragraph 2.